

Claims

- 1) A filter paper pod packaging machine **characterised by the fact** that it comprises a polygonal prismatic wheel (P) with an intermittently rotating horizontal axis (R), each flat face (L) of the prism (P) directly incorporating at least one recess (G) matching the size and shape of the pods to be produced.
- 2) The filter paper pod packaging machine of the previous claim, **characterised by the fact that** each flat face (L) of the prism (P) may be equipped with interchangeable dies (S) featuring recesses (G) that geometrically match the size and shape of the pods to be produced.
- 3) The filter paper pod packaging machine of claims 1 or 2, **characterised by the fact that** by varying the length of each side of the polygon and by varying the width of each face of the prism it is possible to create a plurality of recesses (G) on each flat face (L) of the prism, either in a radial or axial configuration, in one or more rows.
- 4) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** a web of filter paper (F1), fed out from its respective spool (B1), and overlaid by a second web of filter paper (F2) fed out from its respective spool, is wrapped

around the flat faces (L) of the polygonal prismatic wheel (P).

- 5) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** a series of cuts (t) are made in the flat filter paper (F1) in appropriate positions around the central zone corresponding to the recess (G) impressed in the prismatic wheel (P).
- 6) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** a forming punch (M) is applied on the web (F1) in the central zone surrounded by the cuts (t) to mould the web (F1) to the shape (C) of the recess (G), said moulding of the filter paper being optimised by the presence of cuts which flare out (T) to facilitate the formation of a depression in the filter paper web (F1) by action of the forming punch (M), while the peripheral zone of the filter paper (F1) remains flat and adherent to the face (L) of the prism (P).
- 7) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** the forming punch (M) creates a deeper recess (C) in the web (F1) by flaring the cuts (t) to a greater width (W), while the peripheral zone of the filter paper (F1) remains flat and adherent to the face (L) of the prism (P).
- 8) The filter paper pod packaging machine of the previous claims,

characterised by the fact that the greater depth of the recess (C) allows the pod to hold the same quantity of compacted product as symmetrical pods (E), the diameter being equal.

- 9) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** the recesses (G) feature holes (f) through which suction is applied to attract the filter paper (F1), thereby facilitating the moulding of the latter to a shape (C) matching that of the recess (G) during the operation of the forming punch (M).
- 10) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** the suction applied through the holes (f) in the recesses (G) remains on even after the forming punch (M) has completed its action in order to assure the adherence of the filter paper (F1) to the recesses (G) during subsequent processing.
- 11) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** the depression (C), obtained by the action of the forming punch (M) on the filter paper (F1), is filled with a pre-measured volume of product that will be compacted by means of a specific concave tamping punch (N) for producing symmetrical pods.

- 12) The filter paper pod packaging machine of the previous claims, **characterised by the fact that** the deeper depression (C), obtained by the action of the forming punch (M) on the filter paper (F1), is filled with a pre-measured volume of product that will be compacted by means of a specific flat tamping punch (N') for producing asymmetrical pods and subsequently sealed with a flat top made from filter paper (F2) fixed onto the pod along the edges adherent to the faces (L) of the prismatic polygon (P).
- 13) Filter pod obtained with the packaging machine of the previous claims; **characterised by the fact that** being compacted and having a flat top it may be used to make an espresso of good quality with less coffee or an espresso of better quality with the same quantity of coffee.